

CLAIMSWhat is claimed is

1. A circuit for providing a regulated voltage comprising:
 - an upper transistor connected to an input voltage from a voltage source, the upper transistor having a control terminal;
 - a lower transistor connected to the upper transistor, the lower transistor having a control terminal;
 - a voltage regulator connected to receive the regulated voltage, the voltage regulator operable to generate a first control signal applied to the control terminal of the upper transistor, and further operable to generate a second control signal applied to the control terminal of the lower transistor;
 - and
 - a voltage protection circuit comprising:
 - an over-voltage detector circuit powered by the regulated voltage operable to detect an over-voltage condition and further operable to generate an over-voltage detected signal, wherein the over-voltage detected signal causes the lower transistor to draw sufficient current from the voltage source such that the over-voltage condition is abated.
2. The circuit of claim 1 wherein:
 - the over-voltage detector circuit is powered solely by the regulated voltage.
3. The circuit of claim 1 wherein:
 - the voltage regulator comprises a linear regulator
4. The circuit of claim 1 wherein:
 - the voltage regulator comprises a switching regulator.
5. The circuit of claim 4 wherein:

2 the switching regulator comprises a pulse width modulator.

1 6. The circuit of claim 1 wherein:

2 the voltage protection circuit is operable to generate a clamp signal in
3 response to the over-voltage detected signal, wherein the clamp signal is supplied to
4 the control terminal of the lower transistor and wherein the clamp signal causes the
5 lower transistor to draw sufficient current from the input voltage source such that the
6 over-voltage condition is abated.

1 7. The circuit of claim 1 wherein:

2 the over-voltage condition is abated by causing the voltage source to shut
3 down.

1 8. The circuit of claim 1 wherein:

2 the over-voltage condition is abated by shunting the regulated voltage.

1 9. A circuit for protecting against over-voltage comprising:

2 an over-voltage detector powered by a regulated voltage operable to generate
3 an over-voltage detected signal;

4 an amplifier powered by the regulated voltage operable to generate a trigger
5 signal in response to the over-voltage detected signal; and

6 a thyristor adapted to clamp the regulated voltage in response to the trigger
7 signal.

1 10. The circuit of claim 9 wherein:

2 the over-voltage detector is a self-regulating bandgap detector.

1 11. The circuit of claim 10 wherein:

2 the thyristor comprises a silicon controlled rectifier.

12. A method for providing a regulated voltage comprising:

providing an upper transistor connected to an input voltage from a voltage source, the upper transistor having a control terminal;

providing a lower transistor connected to the upper transistor, the lower transistor having a control terminal;

providing a voltage regulator connected to receive the regulated voltage, the voltage regulator operable to generate a first control signal applied to the control terminal of the upper transistor, and further operable to generate a second control signal applied to the control terminal of the lower transistor;

and

providing a voltage protection circuit comprising:

an over-voltage detector circuit powered by the regulated voltage operable to detect an over-voltage condition and further operable to generate an over-voltage detected signal, wherein the over-voltage detected signal causes the lower transistor to draw sufficient current from the voltage source such that the over-voltage condition is abated.

13. The method of claim 12 wherein:

the voltage regulator comprises a pulse width modulator.

14. A method for protecting against over-voltage conditions comprising:

providing an over-voltage detector powered by a regulated voltage operable to generate an over-voltage detected signal;

providing an amplifier powered by the regulated voltage operable to generate a trigger signal in response to the over-voltage detected signal; and

providing a thyristor operable to clamp the regulated voltage in response to the trigger signal.

15. The method of claim 14 wherein:

the thyristor is a silicon-controlled rectifier.